

Secondary Math III
Simplify & Multiply Rational Expressions
Assignment 5.1

Name _____
Period _____

Reduce the fraction to its simplest terms:

1. $\frac{35}{84}$

2. $\frac{32}{68}$

3. $\frac{12}{66}$

Simplify each expression. Don't forget to factor first! List all restrictions on the variable(s):

4. $\frac{36x^3y}{16x^2y^3}$

5. $\frac{(2x+1)(x-3)(x+2)}{(x-3)(2x+1)}$

6. $\frac{x^2-36}{x^2+3x-18}$

7. $\frac{x^2+8x+15}{x^2+4x-5}$

8. $\frac{2x^2+5x+2}{x^2+4x+4}$

9. $\frac{10x^3-2x^2}{12x^2-6x}$

10. $\frac{x^2-3x+2}{x^2-1}$

11. $\frac{x^2-5x-14}{x^2+x-2}$

12. $\frac{x^3+2x^2-9x-18}{x^3+3x^2-4x-12}$

Divide out common factors, then multiply:

13. $\frac{2}{21} \cdot \frac{3}{4}$

14. $\frac{15}{22} \cdot \frac{8}{15}$

15. $\frac{27}{32} \cdot \frac{1}{8} \cdot \frac{16}{9}$

Multiply each expression. Describe any restriction(s) for the variable and simplify the answer when possible. Don't forget to factor first!

$$16. \frac{5x^2}{7} \cdot \frac{14}{3x}$$

$$17. \frac{3mn^2}{10} \cdot \frac{m}{8n} \cdot \frac{20}{3m^2}$$

$$18. \frac{x+1}{x} \cdot \frac{x^2}{2x+2}$$

$$19. \frac{12x-20}{5x} \cdot \frac{6}{9x-15}$$

$$20. \frac{(x+3)(x-4)}{(x-4)(x+2)} \cdot \frac{(x+5)(x-6)}{(x-6)(x+3)}$$

$$21. \frac{x^2-4}{x+5} \cdot \frac{x+5}{x-2}$$

$$22. \frac{x^2+2x-3}{x^2} \cdot \frac{x^3+x^2}{x+3}$$

$$23. \frac{x^2-4x}{x-2} \cdot \frac{x-2}{x}$$

$$24. \frac{x+3}{x-5} \cdot \frac{1}{x^2+6x+9} \cdot (x^2-25)$$

$$25. \frac{5x^2}{x+4} \cdot \frac{3x^2+12x}{7x-7} \cdot \frac{x^2-2x+1}{3}$$